



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/593,501

09/20/2006

Mark Bischoff

3081.167US01

1712

24113 7590 12/02/2009
PATTERSON, THUENTE, SKAAR & CHRISTENSEN, P.A.
4800 IDS CENTER
80 SOUTH 8TH STREET
MINNEAPOLIS, MN 55402-2100

EXAMINER

NGUYEN, HUNG D

ART UNIT

PAPER NUMBER

3742

MAIL DATE

DELIVERY MODE

12/02/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/593,501	Applicant(s) BISCHOFF ET AL.	
	Examiner HUNG NGUYEN	Art Unit 3742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 September 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 20-50 is/are pending in the application.
- 4a) Of the above claim(s) 31-38 and 45-50 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 20-30 and 39-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>9/20/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Species I (Figs. 4-9; Claims 20-31, 37-45 and 47-48) in the reply filed on 10/1/2009 is acknowledged. Non-elected claims 32-36, 46 and 49-50 are withdrawn from consideration and claims are cancelled. The traversal is on the ground(s) that "it indicates that no claims are generic. At least claims 20 and 39 are generic in view of the amendments made to claims 31 and 45 in this response".

This is not found persuasive because generic claim is the claim that read on all species. Claims 20 and 39 are drawn to the polarization modulator which read on Species I and claim 31 in the original claim is drawn to the intensity modulator which read on Species II. However, claims 31, 37-38, 45, and 47-48 are not read on Species I (Polarization Modulator). Therefore, they are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention

Presently, claims 20-30 and 39-44 are currently under consideration.

The requirement is still deemed proper and is therefore made FINAL.

Drawings

2. The subject matter of this application admits of illustration by a drawing to facilitate understanding of the invention. Applicant is required to furnish a drawing under 37 CFR 1.81(c). No new matter may be introduced in the required drawing. Each drawing sheet submitted after the filing date of an application must be labeled in

Art Unit: 3742

the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d).

Specification

3. The specification is objected to because of the following informalities: Page 9, Line 35 of the Specification recites "within the cornea 8" which appears to be wrong reference. It should be changed to "within the cornea 4". Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 20-30 and 39-44 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. In claim 20, there is insufficient antecedent basis for "the material" recited in line 4, and "the beam cross-section" in line 7 in the claim.

7. In claim 22, there is insufficient antecedent basis for "the modulator" and "the deflecting unit" recited in line 2 in the claim.

8. In claim 24, there is insufficient antecedent basis for "the modulator" recited in line 2 in the claim.

Art Unit: 3742

9. In claim 39, there is insufficient antecedent basis for "the material" recited in line 2 and "the focusing" in line 3 in the claim.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 20-24, 39 are rejected under 35 U.S.C. 102(b) as being anticipated by Magnante (US Pat. 6,086,204).

12. Regarding claim 20 and 39, Magnante discloses a machining device which machines a material by non-linear absorption of machining laser radiation, comprising: a laser radiation source 1 (Fig. 1) emitting said laser source; optics 13 (Fig. 1) focusing the laser radiation for non-linear absorption into a material; a polarization modulator 6 (Fig. 1) which cause the focused laser radiation to be linearly polarized, with a polarization direction varying across the beam cross-section.

13. Regarding claim 21, Magnante discloses a deflecting unit 9 (Fig. 1) which modifies a spatial position of the focus in the material by controllable deflection of the laser beam.

14. Regarding claim 22, Magnante discloses the polarization modulator 6 (Fig. 2) is arranged between the laser radiation source 1 (Fig. 2) and the deflecting unit 9 (Fig. 1).

15. Regarding claim 23, Magnante discloses the laser radiation source 1 (Fig. 1) emits linearly polarized radiation and the polarization modulator 6 (Fig. 1)

Art Unit: 3742

inhomogeneously modifies the polarization direction of the laser beam across the beam-cross section.

16. Regarding claim 24, Magnante discloses the polarization modulator 6 (Fig. 1) is arranged within the laser radiation source such that the laser radiation source emits laser radiation having a polarization direction which varies across the beam cross-section.

17. Claims 20-24, 39 are rejected under 35 U.S.C. 102(b) as being anticipated by Campin et al. (US Pub. 2003/0078753).

18. Regarding claim 20 and 39, Campin et al. discloses a machining device which machines a material by non-linear absorption of machining laser radiation, comprising: a laser radiation source 12 (Fig. 1) emitting said laser source; optics 224 (Fig. 1) focusing the laser radiation for non-linear absorption into a material; a polarization modulator 20 (Fig. 1) which cause the focused laser radiation to be linearly polarized, with a polarization direction varying across the beam cross-section.

19. Regarding claim 21, Campin et al. discloses a deflecting unit 221-223 (Fig. 1) which modifies a spatial position of the focus in the material by controllable deflection of the laser beam.

20. Regarding claim 22, Campin et al. discloses the polarization modulator 20 (Fig. 1) is arranged between the laser radiation source 12 (Fig. 1) and the deflecting unit 221-223 (Fig. 1).

21. Regarding claim 23, Campin et al. discloses the laser radiation source 12 (Fig. 1) emits linearly polarized radiation and the polarization modulator 20 (Fig. 1)

Art Unit: 3742

inhomogeneously modifies the polarization direction of the laser beam across the beam-cross section.

22. Regarding claim 24, Campin et al. discloses the polarization modulator 20 (Fig. 1) is arranged within the laser radiation source such that the laser radiation source emits laser radiation having a polarization direction which varies across the beam cross-section.

23. Claims 20-24, 39 are rejected under 35 U.S.C. 102(b) as being anticipated by Tomita et al. (US Pub. 6,932,807).

24. Regarding claim 20 and 39, Tomita et al. discloses a machining device which machines a material by non-linear absorption of machining laser radiation, comprising: a laser radiation source 10 (Fig. 4) emitting said laser source; optics 23 (Fig. 4) focusing the laser radiation for non-linear absorption into a material; a polarization modulator 12 (Fig. 4) which cause the focused laser radiation to be linearly polarized, with a polarization direction varying across the beam cross-section.

25. Regarding claim 21, Tomita et al. discloses a deflecting unit 17/22 (Fig. 4) which modifies a spatial position of the focus in the material by controllable deflection of the laser beam.

26. Regarding claim 22, Tomita et al. discloses the polarization modulator 12 (Fig. 4) is arranged between the laser radiation source 10 (Fig. 4) and the deflecting unit 17/22 (Fig. 4).

27. Regarding claim 23, Tomita et al. discloses the laser radiation source 10 (Fig. 4) emits linearly polarized radiation and the polarization modulator 12 (Fig. 4)

Art Unit: 3742

inhomogeneously modifies the polarization direction of the laser beam across the beam-cross section.

28. Regarding claim 24, Tomita et al. discloses the polarization modulator 12 (Fig. 4) is arranged within the laser radiation source such that the laser radiation source emits laser radiation having a polarization direction which varies across the beam cross-section.

Claim Rejections - 35 USC § 103

29. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

30. Claims 25-26 and 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Magnante (US Pat. 6,086,204) in view of Cordingley et al. (US Pat. 6,381,259).

31. Regarding claim 25-26 and 41-42, Magnante discloses substantially all features of the claimed invention as set forth above except the polarization modulator is adjustable, with respect to the variation of the polarization direction; a control unit which modifies the variation of the polarization direction during operation of the machining device. Cordingley et al. discloses a controlling laser polarization apparatus where the polarization modulator is adjustable and a control unit which modified the variation of the polarization direction during operation of the machining device (Abstract). It would

Art Unit: 3742

have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize in Magnante to have the polarization modulator is adjustable, with respect to the variation of the polarization direction; a control unit which modifies the variation of the polarization direction during operation of the machining device, as taught by Cordingley et al., for the purpose of focusing the laser beam modified by the polarization onto the workpiece.

32. Claims 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Magnante (US Pat. 6,086,204) in view of Ngoi et al. (US Pat. 6,555,781).

33. Regarding claim 27-29, Magnante discloses substantially all features of the claimed invention as set forth above except the laser radiation source emits pulsed laser radiation with a pulse duration of less than 10,000 fs; the laser radiation source emits pulsed laser radiation with a pulse duration of less than 500 fs; the laser radiation source operates at a pulse repetition frequency of more than 100 kHz. Ngoi et al. discloses the laser radiation source emits pulsed laser radiation with a pulse duration of less than 10,000 fs; the laser radiation source emits pulsed laser radiation with a pulse duration of less than 500 fs; wherein the laser radiation source operates at a pulse repetition frequency of more than 100 kHz (Col. 2, Lines 27-32). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize in Magnante to have the laser radiation source emits pulsed laser radiation with a pulse duration of less than 10,000 fs; the laser radiation source emits pulsed laser radiation with a pulse duration of less than 500 fs; the laser radiation source operates at a pulse

Art Unit: 3742

repetition frequency of more than 100 kHz, as taught by Ngoi et al., for the purpose of having ultra short pulsed laser machine.

34. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Magnante (US Pat. 6,086,204) in view of Cordingley et al. (US Pat. 6,381,259) and further view of Ngoi et al. (US Pat. 6,555,781).

35. Regarding claim 30, the combined references disclose substantially all features of the claimed invention as set forth above except the laser radiation source operates at a pulse repetition frequency of more than, 450 kHz. Ngoi et al. discloses the laser radiation source operates at a pulse repetition frequency of more than, 450 kHz (Col. 2, Lines 27-32). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize in the combined references to have the laser radiation source operates at a pulse repetition frequency of more than, 450 kHz, as taught by Ngoi et al., for the purpose of having a fast repetition laser machine.

36. Claims 40 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Magnante (US Pat. 6,086,204) in view of Swinger et al. (US Pat. 6,325,792).

37. Regarding claim 40, Magnante discloses substantially all features of the claimed invention as set forth above except for shifting the position of the focus of the laser radiation at least two-dimensionally. Swinger et al. discloses the focus of the laser radiation at least two-dimensionally (Col. 25, Lines 63-67; Col. 27, Lines 60-63). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize in Magnante to have the focus of the laser radiation at least two-

Art Unit: 3742

dimensionally, as taught by Swinger et al., for the purpose of verifying the two-dimensional scan position of the laser beam.

38. Regarding claim 44, Magante discloses substantially all features of the claimed invention as set forth above except for forming cut surfaces in the material by areal sequential arrangement of optical breakthroughs generated by non-linear absorption, the cut surfaces being located in the material and have a cutting line extending, up to the surface of the material. Swinger et al. discloses forming cut surfaces in the material by areal sequential arrangement of optical breakthroughs generated by non-linear absorption, the cut surfaces being located in the material and have a cutting line extending, up to the surface of the material (Col. 25, Line 62 to Col. 26, Line 54). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize in Magnante to have forming cut surfaces in the material by areal sequential arrangement of optical breakthroughs generated by non-linear absorption, the cut surfaces being located in the material and have a cutting line extending, up to the surface of the material, as taught by Swinger et al., for the purpose of removing a thin layer of unwanted material.

39. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Magnante (US Pat. 6,086,204) in view of Haight et al. (US Pub. 2002/0125230).

40. Regarding claim 43, Magnante discloses focusing the laser radiation in the vicinity of the surface of the material 15 (Fig. 1) to be machined except for the distance of the focus from the surface of the material to be machined lying approximately in the range of the Rayleigh length of the radiation. Haight et al. discloses the distance of the

Art Unit: 3742

focus from the surface of the material to be machined lying approximately in the range of the Rayleigh length of the radiation (Par. 10 and 55). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize in Magnante to have the distance of the focus from the surface of the material to be machined lying approximately in the range of the Rayleigh length of the radiation, as taught Haight et al., for the purpose of having efficiently energy of pulse laser light onto the material.

41. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Waelti (US pat. 6,755,819) discloses a method and device for the photoablation of the cornea with a laser beam. Frey et al. (US Pat. 2001/0016733) discloses a method of correcting vision.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUNG NGUYEN whose telephone number is (571)270-7828. The examiner can normally be reached on Monday-Friday, 9M-6PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tu Hoang can be reached on (571)272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3742

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Quang T Van/
Primary Examiner, Art Unit 3742

/HUNG NGUYEN/
Examiner, Art Unit 3742
11/16/2009